Formation of the Acyl Chain within the Alkamides

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Echinacea, a coneflower species that is native to North America, are the most consumed medicinal plants in the United States and Europe. Their medicinal usage focuses on the treatment and prevention of colds, influenza, and other upper respiratory tract infections. In part, the traditional medicinal uses of *Echinacea* are attributed to their alkamide content. Structurally alkamides consist of an amine moiety acylated with a variety of fatty acids. To better describe the biosynthetic process leading to the formation of acyl chains within alkamides of *Echinacea purpurea*, stable isotope labeling experiments with analysis via LC/MS and NMR was undertaken. As previously reported from our lab, the acyl chains of alkamides are synthesized from fatty acid synthesis via HSQC NMR analysis of a tetraenoic isobutyl amide alkamide. As part of our continuing efforts to probe the acyl chain biosynthesis within *E. purpurea,* we herein report the HSQC NMR analysis of a proposed dienoic isobutyl amide alkamide that was labeled with a 70/30 [U-$^{12}C_6$]/[U-$^{13}C_6$]glucose mixture. The magnitude of ^{13}C-^{13}C one-bond coupling observed by NMR will allow for incorporation patterns to be determined and will help to elucidate the structure and biogenesis of this dienoic isobutyl amide alkamide.

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